Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Pulmonary Manifestations of Systemic Disease

TOPIC: Pulmonary Manifestations of Systemic Disease
TYPE: Medical Student/Resident Case Reports

COVID-19-ASSOCIATED DIFFUSE ALVEOLAR HEMORRHAGE: A CASE REPORT

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INTRODUCTION: SARS-CoV-2 may present on a spectrum of clinical severity, ranging from mild respiratory symptoms to fatal hemoptysis. Diffuse alveolar hemorrhage (DAH) is an uncommon life-threatening condition associated with many infectious pathologies such as viral pneumonia (i.e. Influenza A) [1, 2]. In this report, we present an immunocompetent patient with COVID-19 who developed DAH.

CASE PRESENTATION: A 28 year old female presented with lower abdominal pain and was diagnosed with a right adnexal ectopic pregnancy. After an urgent laparoscopy, she became hypoxemic with two episodes of hemoptysis. Chest X-ray revealed diffuse bilateral interstitial and ground-glass opacities. Chest CT Angiography showed bilateral dense consolidations, suggestive of either hemorrhage or infection. Bronchoalveolar lavage(BAL) on postoperative day 2 confirmed the presence of bloody secretions. See figure 1. Sequential BAL revealed progressive bloody aliquots. Additionally, her COVID PCR and Pneumocystis jirovecii antibody returned positive, but tested negative for HIV 1/2/P24 and acid-fast bacillus. Patient was discharged shortly after being treated with dexamethasone.

DISCUSSION: Clinical features of DAH include dyspnea, cough, hemoptysis, and alveolar infiltrates [3]. DAH is commonly associated with autoimmune diseases such as granulomatosis with polyangiitis [3]. However, infectious diseases such as influenza A have also been implicated [4]. In 2020, two cases of immunocompromised patients' COVID-19 associated DAH were reported; however, to our knowledge, this is the first case of COVID-19 associated DAH in an immunocompetent patient [5]. The uncertainty arises because many diseases can cause DAH, and often critically ill patients are plagued with numerous maladies, just as our patient was positive for PJP and COVID-19. Neutrophilic infiltration and hemorrhage on histology may be seen, but neither confirms the diagnosis. Other features include edema and hyaline membrane formation [6,7]. See Figure 2. The fatal presentation of DAH often forces clinicians to treat broadly. Glucocorticoids are the mainstay of therapy, especially if capillaritis is present. Autoimmune diseases may need cyclophosphamide or rituximab[8]. However, It is unclear if corticosteroids are beneficial in non-rheumatologic cases. And transfusion may be required with severe hemorrhage. Respiratory support and hemostasis are the cornerstones of therapy. Intravenous and intrapulmonary recombinant factor VIIa for hemostasis in pediatric patients may be a potential treatment of choice in adults[9].

CONCLUSIONS: DAH may be the product of many diseases, and the varying severity of presentation may further cloud the underlying diagnosis. Our case brings forth another possible malicious outcome due to COVID-19. Understanding the mechanism of injury behind DAH may help elucidate COVID-19 management.

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